

**Amoco Petroleum Products
Refining Business Group
Whiting Business Unit**

2815 Indianapolis Boulevard
Post Office Box 710
Whiting, Indiana 46394-0710
219-473-7700

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

February 17, 1997

Mr. Stephen Judith
Water Enforcement Section
Office of Enforcement
Indiana Department of Environmental Management
100 North Senate Street
P.O. Box 6015
Indianapolis, IN 46206-6015

Dear Mr. Judith:

This letter provides additional information/clarifications regarding the actions that we are taking to prevent a recurrence of the incidents that occurred on June 18 and July 18 of last year. Subsequent to our letter dated December 4, 1996, which described all the steps we are taking to prevent a recurrence, I had a detailed conversation with Mr. Mark Balazs from the IDEM Gary Office to review our actions. He had several questions/clarifications regarding our operations, procedures and the actions we are taking and recommended that we also directly provide this information to you.

The questions/clarifications raised by Mr. Balazs along with the responses are provided below. They follow the same sequence as the actions that were previously listed in the December 4, 1996, letter.

1. How is the information regarding a high water or solids content in crude used?
The early warning system that has been implemented by Amoco Pipeline Company and the refinery provides the refinery with advance notice of an impending crude receipt with high solids or water content. This information allows operations to be fully prepared to handle this crude and thus minimize the likelihood of a desalter upset. Also, should an upset occur, this information allows operations to rapidly respond to correct the upset. Some of these steps include ensuring that as much of the water as possible is removed at the crude tank through the crude tank water draw system, optimizing chemical usage and process parameters at the desalters, and if necessary adjusting the mix of crudes being supplied from the crude tanks to the Pipestills (crude unit) .

2. How many tanks are in crude oil service? Explain the changes that have been made to operating procedures to ensure good crude oil quality.
We have six tanks, Tanks 915 - 920, that are primarily used to receive, store and supply crude oil to the Pipestills. Water is removed from the bottom of all these tanks via the tank water draw system. An evaluation of the floating suction of all the crude tanks showed that floating suction on only two of the tanks, Tank 916 and Tank 918, need improvement. Ensuring that the floating suction always remains at the top of the oil layer in the tank allows only oil to be transferred from the crude tanks to the Pipestills. The floating suction on Tank 916 will be repaired this year. Until this correction is made, Tank 916 will not supply crude oil directly to the Pipestills. Crude oil from Tank 916 will be pumped to another crude tank before being transferred to the Pipestills. Tank 918 is being used to only store heavy crude oil due to buoyancy limitations on its floating suction. Adjustments to the floating suction of Tank 918 will be made during the next scheduled outage of the tank. These measures to ensure that only crude oil is transferred from the crude oil tanks will improve crude oil quality to the desalters.
3. What information does the increased crude composite sampling provide?
The crude composite sampling frequency which has been increased from monthly to weekly provides information on the water and solids content in the crude oil supplied to the Pipestills. This enables operations engineers to trend crude quality and compare it against the performance of the desalters. This analysis is used to optimize desalter operations. The distribution of these reports has also been widened to enhance awareness of crude oil quality.
4. What is the preventative maintenance schedule on the strainers?
Maintenance on the strainers installed on the water draw pumps is performed when the pressure drop across the strainer exceeds a set value. The instrumentation measuring this pressure drop has been upgraded to ensure that reliable information is being transmitted. This information is used to verify that the strainers are not plugged and that the water draw system is operating effectively. A high priority is placed on cleaning the strainers when the pressure drop exceeds an acceptable set value.
5. Who is performing the review of the tank water draw system?
Amoco engineers are performing a review of the tank water draw system capacity and operating capability to ensure that the system is sized and designed to handle the water contained in crude oil that is received by the refinery.
6. How is the performance of the water draw system verified?
We have instituted an expanded management system to ensure proper verification of the tank water draw operations. The water draw pumps are

operated until an oil detector on the system indicates that the oil level has been reached and all the water has been pumped out. The regular logging of pressure drop readings provides verification that the water draw system is operating efficiently. In addition, analyses for water in oil are run on crude oil samples three times a week to ensure that water in the crude is being removed by the water draw system. These procedures have been implemented to make sure that we pump crude oil with minimal upset potential to the Pipestills.

7. What information do the operators use to identify a potential problem?
Operators at the tank fields and Pipestills monitor the water content in crude oil (measured by Karl Fisher (KF) analysis in our laboratory). A high KF value provides an indication that water is carrying over with the crude being charged to the Pipestills and allows operations to take corrective action.
8. What unit is referred to as 11B?
The refinery has three Pipestills referred to as 11A, 11C and 12. The coking unit (Coker), which is part of the 11A and 11C Pipestill complex, is numbered as 11B.
9. What is the function and operational level of the equalization tank?
We have two 10 million gallon capacity tanks at the wastewater treatment plant that serve as equalization/storm surge tanks. Between 30-50% of the capacity of one of the tanks is used for equalization. The remaining capacity of this tank, as well as the other tank, is used for storm surge. Equalization is used to minimize (smooth out) any spikes in concentrations and ensure that a relatively constant wastewater quality is supplied to the biological portion (activated sludge plant) of the treatment plant.
10. Who receives the desalter reports?
The distribution of weekly reports on desalter operations has now been expanded to include wastewater treatment plant operations. Previously, these reports were only being provided to Pipestill operations. The wider distribution has helped enhanced awareness and communications between these units.
11. What is the status of the temporary solids removal system?
The wastewater treatment plant is presently operating a temporary rotary drum thickener to enhance biological solids removal from the activated sludge plant. Biological solids are removed from the bottom of the clarifier and processed through this unit. Water that is separated from the biological solids in this unit is reprocessed through the activated sludge plant. The improved solids removal allows the activated sludge plant to operate efficiently and also recover quickly from upsets. Operating information from this temporary unit is also being used to evaluate longer term solids handling options.

February 17, 1997
Mr. Stephen Judith
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I hope the additional information clarifies the steps we are taking to prevent a recurrence of last year's incidents. As you requested, please find enclosed a drawing of the Refinery and Area Layout. Please contact me at (219) 473-3740 if you have any questions or would like additional information. Could you also close out this matter and send me a confirmation if this is acceptable.

Sincerely,

Shiv Baloo

Shiv Baloo
Team Leader - Water

cc: Mark Balazs, IDEM, Northwest Indiana Office



D. H. Wilson
Manager, Whiting Business Unit

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SMJ

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December 4, 1996

Mr. Mark W. Stanifer
Chief, Water Enforcement Section
Office of Enforcement
Indiana Department of Environmental Management
100 North Senate Street
P.O. Box 6015
Indianapolis, IN 46206-6015

NPDES Permit Number IN 0000108
Reply to Warning of Noncompliance - Cause No. B-2006

Dear Mr. Stanifer:

Per your correspondence dated 31 October 1996, this letter outlines the actions we have already taken, as well as the projected plan and timetable for additional actions that are aimed at preventing a recurrence of the incidents that occurred on June 18 and July 18 this year. As our Discharge Monitoring Report (DMR) record illustrates, these incidents are unprecedented. Up until the June 18 incident, the refinery had exceeded a process parameter (Outfall 001) only once since 1984. As stated in prior correspondence with your office, both incidents resulted from operational upsets combined with heavy rains which caused exceedances of NPDES permit limits at Outfall 001. On average, one inch of rainfall equates to six million gallons of additional flow to the wastewater treatment plant (Lakefront). Rainfall during these two incidents was very intense with as much as one inch of rainfall in a one hour period. Total accumulations for June 17/18 and July 17/18 were 2.6 and 6.0 inches, respectively.

Following the incident on June 18, a project team was assembled to review upstream refinery operations as well as Lakefront operations to identify opportunities for improvement. This review included an assessment of crude oil deliveries, tank water draw operations, Pipe Still desalter operations, process sewer dynamics, management of process water and stormwater, and Lakefront operations and communications.

The action items identified in the review are organized into four distinct sections based on refinery operations. The items in each of the sections are aimed at first, minimizing the likelihood of an upset, and second, mitigating the magnitude of an upset by the development and implementation of early detection measures and improved

communications. Finally, the action items listed also address improved handling of upsets at the Lakefront. This organization will allow us to focus our efforts efficiently and effectively between refinery and Lakefront operations.

The initiatives that are being taken to manage crude oil deliveries, tank water draw operations, and desalter operations will minimize the likelihood of future desalter upsets. Development and implementation of early detection methods is ongoing and will minimize the magnitude of desalter upsets if they should occur. Mitigating the magnitude of desalter upsets will allow the Lakefront to treat the influent process wastewater without the need to impound large quantities of water. The Lakefront is also instituting operational and communication protocol that will enhance coordination among affected units when upsets occur.

The action plan and associated timetable is as follows:

The project team identified the following improvements that will be implemented in order to minimize the likelihood of desalter upsets from occurring.

Improved monitoring of crude oil deliveries will aid in minimizing the likelihood of future desalter upsets.

1. An early warning system for high solids or water content is in place for incoming crudes. High solids or water loadings to the desalter can create an upset condition in the desalter operation. The upset results in an oil/water/solids emulsion being carried through with the desalter brine; this results in an increased loading to the process sewer. Although the Lakefront is capable of handling the desalter brine, the emulsion creates additional stress on the activated sludge population. A formal notification procedure has been developed and implemented between Amoco Pipeline Company and the refinery. This procedure will give advance notice of an impending crude receipt with a high solids or water content.
2. An evaluation was performed on crude tank floating suction during the third quarter of this year. This evaluation revealed opportunities for improved performance of these floating suction which withdraw crude oil from the tank. Proper performance of the suction is critical to ensure that only oil, and not water, is pumped to the Pipe Still desalters. Specifically, floating suction problems with Tank 916 will be corrected during a scheduled 1997 tank outage. However, until this correction takes place, Tank 916 will not feed crude oil directly to the crude distillation units (11 Pipe Still and 12 Pipe Still). Oil from Tank 916 will be pumped to another tank before being transferred to the Pipe Stills. Tank 918 will be limited to heavy crude oil service only due to buoyancy limitations on its floating suction. Adjustments to Tank 918's floating suction will be considered at its next scheduled outage. These steps will improve crude quality to the desalters by ensuring that only oil is pumped from the crude tanks to the Pipe Stills.
3. Crude composite receipt sampling and reporting has been increased from monthly to weekly and the distribution of these reports has also been widened. These changes are designed to greatly enhance awareness of crude quality.

Efficient operation of tankfield water draw operations improves the quality of crude being sent to the desalters by reducing the amount of water in the tank; as a result, this will help minimize the likelihood of future desalter upsets.

1. A review has been conducted on the design and capacity of strainers installed on tank water draw pumps. We are increasing the preventative maintenance on the strainers to ensure good operation; this maintenance will decrease unplanned downtime and improve the water draw rate.
2. An engineering review of the entire tank water draw system capacity has been initiated to ensure that the system can adequately handle water coming in with the crude via pipeline. This study, which we anticipate to be completed by April 1997, will review pump capacity, line size, and maintenance schedules. The recommendations from this study will be evaluated in conjunction with all other recommendations for implementation.
3. To improve the overall efficiency of the water draw system, the feasibility of additional water detection probes is currently under evaluation. We anticipate completing this review by third quarter 1997.
4. A management system to ensure proper verification of water draw operations has been implemented. This system includes the addition of checkpoints to operator checklists. By properly and routinely verifying water draws, the element of human error in this operation can be greatly reduced.

The next set of action items are aimed at minimizing the likelihood of an upset by optimizing Pipe Still desalter operations and mitigating the magnitude of an upset via early detection.

Improving desalter performance via operational and equipment changes

1. The recycle mudwash system on 11C Pipe Still's D-200 desalter is in-service and is operated daily to help maintain more stable desalter operations. This system allows for a more continuous mudwash operation which minimizes slugs of solids from getting into the sewer system, thereby improving desalter operations and minimizing upsets. Amoco has under contract a chemical vendor with special expertise in desalter operations to assist in daily desalter system management.
2. Impacts from desalter upsets will also be minimized via expanded tankfield and Pipe Still operator awareness training and the upgrade of existing control schemes; these actions were completed during the third and fourth quarters of this year. Prompt recognition and response is critical to mitigating desalter upsets. In addition, operational procedures to mitigate a desalter upset at the Pipe Stills include 'off-hours' call-out of our expert consultant to provide support in managing desalter operations.

3. A new recycle mudwash system has been installed on 11A Pipe Still's D-2 desalter and is now in use. We are currently reviewing the design of this system in order to improve its performance. It is anticipated that this review will be completed and the changes to the initial design executed by fourth quarter of 1997.
4. An agar probe level detection system is in-service on both 11A and 11C Pipe Still; this system is designed to improve desalter level control and early detection of oil in the brine. Additional work is ongoing to enhance the operation of the level detection system. Furthermore, an improved level control system is currently in place at 12 Pipe Still. Optimum level control is crucial when processing heavy crude, because the low API gravity reduces desalter efficiency and can result in upsets.
5. A new recycle mudwash system, similar to the one at 11 Pipe Still, is being designed at 12 Pipe Still and is scheduled to be installed during the fourth quarter of 1997. The installation of this system will enhance desalter performance and reduce the likelihood of desalter upsets at 12 Pipe Still.

Finally, the Lakefront section of the action plan includes several communications and operational improvements.

1. Increased communication with other process units.

When the Lakefront impounds water because of a unit upset, the unit asset superintendent will receive a follow-up note which will provide information on why the impoundment was necessary and the volume of water impounded. The process unit is then expected to indicate the preventive methods or training that will be implemented to try to prevent the recurrence of the event, and to review this information with their crews.

2. Increased communication with the desalter chemical vendors.

The chemical vendors for the desalters have started providing weekly desalter reports. The purpose of these reports is to provide more information about desalter performance to aid in optimization of this operation.

3. Chemical treatment at the outlet of the storm surge/equalization tank.

A new chemical is now being added at the outlet of the storm surge/equalization tank. The addition of this chemical aids in the separation of oily solids from the water at the dissolved air flotation unit (DAF) and prevents the solids from carrying over to the Activated Sludge Plant (ASP). This chemical addition system, which was approved by IDEM in June of this year, enables the Lakefront to better handle oily solids produced during desalter upsets.

4. Enhanced solids removal.

The Lakefront is currently trying to obtain a temporary, portable unit to enhance biological solids removal from the activated sludge plant. Three units are currently under

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consideration: a rotary drum thickener, a gravity belt thickener, and a DAF. Improved solids removal will allow the plant to recover from upsets, such as desalter upsets or heavy rains, more expediently. The temporary portable unit will also serve as a pilot test for some longer term solids handling options. A decision on implementation will be made by the first quarter of 1997.

5. **Longer term, permanent improvements to solids handling.**

A detailed engineering review has been initiated to evaluate possible projects for long term solids handling at the Lakefront. This review is evaluating operational changes and the equipment required for effective solids removal. Improved sludge removal and handling within the system will prevent biosolids from carrying over to the outfall. In addition, the Lakefront will be able to better handle process (including desalter) upsets because of lower biomass inventories. Some of the options being evaluated include increased biological solids removal at the clarifier, a separate biological solids thickening system, or improved dissolved air flotation unit performance. This review is expected to be completed by the third quarter of 1997.

6. **Modified water shedding plan.**

The water shedding plan is being modified so it can be implemented quicker and in stages. This modification will allow critical operations such as crude tank water draw operations and desalter mudwashing to continue, while limiting the overall surge to the Lakefront. Subsequently, the storm surge can be routed to the Lakefront later in time and under a controlled rate. During past watershedding events, these operations were suspended as well; however, this was found to be deleterious to desalter performance.

The most effective way to prevent the recurrence of this past summer's incidents is to prevent the upstream upset from ever occurring. However, we recognize that this may not always be possible, and are therefore evaluating and implementing improvements at the Lakefront as well. This approach, and the supporting action plan, utilizes sound judgment from both an operational standpoint and a feasibility perspective. In addition to the items that have been or are in the process of being implemented, additional actions will be taken once the engineering reviews are completed. The items from the reviews will be evaluated for effectiveness and feasibility, with a final set of recommendations delineated and implemented. We will always continue to look for more effective ways to operate this refinery in a safe, environmentally sound manner.

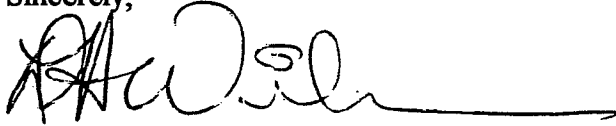
Mr. Mark W. Stanifea

December 4, 1996

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We will provide an update once the reviews have been completed and specific additional actions have been identified. Please contact Shiv Baloo at (219) 473-3740 or Julie Murphy at (219) 473-3577 if you have any questions or would like additional information.

Sincerely,

A handwritten signature in dark ink, appearing to read "D. H. Wilson", with a long horizontal flourish extending to the right.

D. H. Wilson

Manager, Whiting Business Unit



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July 31, 1996

Mr. Mark W. Stanifer
Chief, Water Enforcement Section
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AUG 2 1996

NPDES Permit Number IN 0000108

Reply to Warning of Noncompliance - Cause No. B-2006

Dear Mr. Stanifer:

This is in response to your letter addressed to Mr. Ford requesting additional information regarding the June 18, 1996 incident. Operational upsets combined with heavy rains caused exceedances of NPDES permit limits for total suspended solids, oil and grease, chemical oxygen demand and biological oxygen demand. During this incident, the activated sludge plant portion of the wastewater treatment plant was temporarily bypassed, after notice to IDEM, for approximately 30 minutes to protect the wastewater treatment plant from becoming inoperable.

At the outset we would like to clarify a few issues:

1. While previous operational upsets had reduced storm surge capacity by around 4 million gallons, the wastewater treatment plant still had approximately 9 million gallons of storm surge capacity on the day of the heavy rains.
2. Permit limits had already been exceeded by the time the temporary bypass was initiated. The bypass was attempted to protect the wastewater treatment plant from becoming inoperable and then requiring an extended period of time to recover.

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Mr. Mark W. Stanifer
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3. A temporary shutdown of refinery operations would not have avoided the bypass. The shutdown could not be implemented safely in time to prevent the exceedances or the bypass. In fact, a shutdown would have adversely impacted the situation.

Details of these issues are discussed below.

Process upsets at the desalter two weeks prior to the incident resulted in increased loadings of solids and oil and grease to the refinery wastewater treatment plant. In order to prevent these upsets from significantly impacting the wastewater treatment plant, the influent to the wastewater treatment plant was stored in the storm surge/equalization tanks (total operating capacity 18.5 million gallons) for the duration of the upset. This water was subsequently reintroduced to the wastewater treatment plant at a slower rate. On the morning of June 17, 1996 the water being stored in the tanks was reduced to approximately 10 million gallons (normal operating volume in the tanks ranges between 4 and 6 million gallons).

We implemented the refinery water shedding plan at 9:00 am on June 18, 1996 in anticipation of the heavy rains in the Whiting area that began later in the day around 11:00 am. The water shedding plan is designed to reduce the water loading to the wastewater treatment plant by reducing the amount of process water that is discharged to the sewers. In this instance, the following measures were taken:

1. well point systems were shut off;
2. units eliminated/reduced water use and also stored water in surge tanks on the process units where possible;
3. cooling tower blowdowns were shut off; and
4. water draws from tanks were stopped.

In an effort to control storm water flow and maintain effluent quality, influent water was stored in the storm surge/equalization tanks and then metered into the activated sludge plant at a slower rate, thus controlling the hydraulic residence time through the plant. These actions helped maintain effluent quality within permit limits on June 17, 1996. However, as a result of the continuing storm event that lasted into the early morning hours on June 18, the storm surge/equalization tanks were filled to capacity.

The increased flow from the storm caused the activated sludge beds in the clarifier to rise and resulted in a partial washout of the activated sludge

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Mr. Mark W. Stanifer
Page 3

population from the clarifier. The activated sludge in the effluent resulted in the high loadings of total suspended solids, chemical oxygen demand, biological oxygen demand and oil and grease. Federal, state and local agencies were notified of the incident and we initiated an extensive response effort to mitigate the situation.

Later in the day, we decided to bypass the activated sludge plant portion of the wastewater treatment plant at around 3:45 pm on June 18, 1996. We were concerned that the wastewater treatment plant would become inoperable, because the forecast called for additional thunderstorms for the early evening hours. A continued washout of the activated sludge population due to the high water flows would result in a loss of biological treatment and would render the plant inoperable. It would then take several days for the plant to recover and become operational. IDEM officials, both on-site and in Indianapolis, were apprised of the situation throughout the day. We also discussed the decision to bypass and the reasons for it before initiating the bypass. The bypass was stopped within thirty minutes, as the forecast was changed reducing the likelihood of thunderstorms.

We did not temporarily shutdown refinery operations on June 18 because of safety, environmental and timing issues. A safe and environmentally sound shutdown of the refinery takes two to three days and would not have impacted the bypass. All petroleum hydrocarbons in a unit must be completely flushed before the shut down in order to deinventory the unit and place it in a safe standby mode. Flushing the unit involves steaming and washing the lines and vessels to make sure the unit is free of hydrocarbons. These operations generate additional water and much higher than normal amounts of oil that has to be processed at the wastewater treatment plant and as a result would have further aggravated the situation. For these reasons, the refinery did not shutdown.

As stated in our June 24, 1996 letter, we took several steps to mitigate the impact of the incident. In addition to the water shedding and activating our response team and contractors, we installed boom around the outfall to collect and recover activated sludge solids that were washed out in the effluent. We carried out extensive surveillance of the shoreline and the Lake to determine if there were any impacts and also notified all governmental and area entities that could be impacted by the solids. Health concerns because of fecal coliform was not an issue with the activated sludge solids because the refinery does not treat sanitary wastes. Experts from our Research department and the chemical contract firm were called in to work on optimizing the dosages of chemicals being

July 31, 1996
Mr. Mark W. Stanifer
Page 4

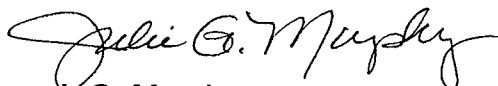
added at the wastewater treatment plant in an effort to improve effluent quality. All process units monitored the quality of process water being discharged to the sewer in order to prevent high loadings to the wastewater treatment plant. With the absence of additional rain on June 18, 1996 the wastewater treatment plant recovered quickly and the effluent to the Lake was within permit limits. Recent enhancements to the wastewater treatment plant also helped in this quick recovery.

We have also assembled a project team to review the incident and to develop improvements to prevent a reoccurrence. The project team will perform an exhaustive assessment of upstream refinery operations (up to the point of desalter wash water generation) as well as wastewater treatment plant operations to identify opportunities for improvement. Some of the upstream operations that will be reviewed by the project team include crude deliveries, tank water draw systems and desalter operations. Wastewater treatment plant issues that will be reviewed by the team include storm water handling systems and enhancements to the wastewater treatment plant. The project team will then evaluate the opportunities identified and implement the recommendations selected. The objective of the project team is to implement improvements that will reduce the likelihood of a reoccurrence.

In light of the foregoing, Amoco believes that the June 18 bypass was authorized by the facility's NPDES permit. In addition, we believe that the exceedances of the effluent limitations do not constitute a violation of its NPDES permit because the circumstances qualify as an "upset", as the term is defined in the NPDES permit.

We appreciate the opportunity to provide clarifications about the June 18 exceedance. Please contact Shiv Baloo at (219) 473-3740 or myself at (219) 473-3577 if you have any further questions or would like additional information.

Sincerely,

A handwritten signature in cursive script, appearing to read "J. G. Murphy".

J. G. Murphy
Manager, Environmental, Health and Safety



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Refining Business Group
Whiting Business Unit**

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At the outset we would like to clarify a few issues:

1. While previous operational upsets had reduced storm surge capacity by around 4 million gallons, the wastewater treatment plant still had approximately 9 million gallons of storm surge capacity on the day of the heavy rains.
2. Permit limits had already been exceeded by the time the temporary bypass was initiated. The bypass was attempted to protect the wastewater treatment plant from becoming inoperable and then requiring an extended period of time to recover.

3. A temporary shutdown of refinery operations would not have avoided the bypass. The shutdown could not be implemented safely in time to prevent the exceedances or the bypass. In fact, a shutdown would have adversely impacted the situation.

Details of these issues are discussed below.

Process upsets at the desalter two weeks prior to the incident resulted in increased loadings of solids and oil and grease to the refinery wastewater treatment plant. In order to prevent these upsets from significantly impacting the wastewater treatment plant, the influent to the wastewater treatment plant was stored in the storm surge/equalization tanks (total operating capacity 18.5 million gallons) for the duration of the upset. This water was subsequently reintroduced to the wastewater treatment plant at a slower rate. On the morning of June 17, 1996 the water being stored in the tanks was reduced to approximately 10 million gallons (normal operating volume in the tanks ranges between 4 and 6 million gallons).

JUNE 17, 1996

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Later in the day, we decided to bypass the activated sludge plant portion of the wastewater treatment plant at around 3:45 pm on June 18, 1996. We were concerned that the wastewater treatment plant would become inoperable, because the forecast called for additional thunderstorms for the early evening hours. A continued washout of the activated sludge population due to the high water flows would result in a loss of biological treatment and would render the plant inoperable. It would then take several days for the plant to recover and become operational. IDEM officials, both on-site and in Indianapolis, were apprised of the situation throughout the day. We also discussed the decision to bypass and the reasons for it before initiating the bypass. The bypass was stopped within thirty minutes, as the forecast was changed reducing the likelihood of thunderstorms.

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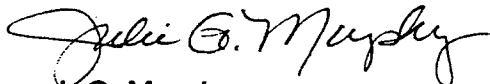
added at the wastewater treatment plant in an effort to improve effluent quality. All process units monitored the quality of process water being discharged to the sewer in order to prevent high loadings to the wastewater treatment plant. With the absence of additional rain on June 18, 1996 the wastewater treatment plant recovered quickly and the effluent to the Lake was within permit limits. Recent enhancements to the wastewater treatment plant also helped in this quick recovery.

We have also assembled a project team to review the incident and to develop improvements to prevent a reoccurrence. The project team will perform an exhaustive assessment of upstream refinery operations (up to the point of desalter wash water generation) as well as wastewater treatment plant operations to identify opportunities for improvement. Some of the upstream operations that will be reviewed by the project team include crude deliveries, tank water draw systems and desalter operations. Wastewater treatment plant issues that will be reviewed by the team include storm water handling systems and enhancements to the wastewater treatment plant. The project team will then evaluate the opportunities identified and implement the recommendations selected. The objective of the project team is to implement improvements that will reduce the likelihood of a reoccurrence.

In light of the foregoing, Amoco believes that the June 18 bypass was authorized by the facility's NPDES permit. In addition, we believe that the exceedances of the effluent limitations do not constitute a violation of its NPDES permit because the circumstances qualify as an "upset", as the term is defined in the NPDES permit.

We appreciate the opportunity to provide clarifications about the June 18 exceedance. Please contact Shiv Baloo at (219) 473-3740 or myself at (219) 473-3577 if you have any further questions or would like additional information.

Sincerely,

A handwritten signature in cursive script, appearing to read "J. G. Murphy".

J. G. Murphy

Manager, Environmental, Health and Safety



**Amoco Petroleum Products
Refining Business Group**

Whiting Business Unit

2815 Indianapolis Boulevard
Post Office Box 710
Whiting, Indiana 46394-0710
219-473-7700

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

July 26, 1996

Mr. Gary Starks
Indiana Department of Environmental Management
Office of Water Management
105 South Meridian Street
Indianapolis, IN 46206-6015

Dear Mr. Starks:

**NPDES Permit No. IN 0000108
Exceedance of Discharge Parameters at Outfall 001**

This letter serves as a follow-up to our initial notification on Thursday, July 18, 1996, concerning the exceedance of discharge parameters at Outfall 001. Daily maximum values were exceeded for total suspended solids (TSS) and oil and grease (O&G). The analytical results for these parameters were obtained on Friday, July 19. The discharge loadings from Outfall 001 on July 18 based on these results are: oil and grease 4,682 lbs, and total suspended solids 30,184 lbs.

The exceedance for these parameters was limited to July 18, 1996. The discharge met all permit limits starting Wednesday, June 19, as documented by subsequent analytical testing. Heavy storm flow coupled with refinery process upsets led to increased loadings and flow to the activated sludge plant. These stresses to the activated sludge population caused the sludge beds in the clarifiers to rise resulting in increased activated sludge solids in the effluent. The increased TSS loadings in the effluent caused the oil and grease parameter to be exceeded.

For the day, the Lakefront Wastewater Treatment Plant processed 32.7 million gallons of water, with an effluent to Lake Michigan of 23.2 million gallons (the difference, 9.5 million gallons, was recycled back to the refinery). The 32.7 million gallon flow is approximately 10 million gallons above average. Rainfall data received from the City of Chicago's Water Reclamation District showed that 3.36 inches and 2.59 inches of precipitation were recorded on July 17 and July 18, respectively. On the afternoon of July 17, as a severe storm appeared imminent, proactive measures were taken to minimize any potential impact to Lake Michigan. Containment boom was deployed around Outfall 001 (treated process water) to prevent the migration of any sheen or floatable solids that might be discharged.

July 26, 1996
Mr. Gary Starks
Page 2

Along with the severe storm event, the wastewater treatment plant had experienced higher than normal influent loading from previous refinery process upsets at the desalter. Desalter upsets created an emulsion in the water wash which resulted in an increased loading to the wastewater treatment plant. Because of the increased loadings, water was impounded in the storm surge/equalization tanks (20 million gallon total capacity) and metered to the activated sludge plant at a lower rate.

Despite the extreme storm event, the refinery achieved its permit limits on July 17, 1996. The refinery implemented its water shedding plan beginning on Monday July 15 as a result of the desalter upsets. The refinery water shedding plan reduces the water flow to the sewer by turning off or storing a number of streams that normally enter the process sewer. Some of these streams include the refinery wellpoint systems used in the recovery of ground oil/water, water draws from aboveground storage tanks, trimming bearing flows, shutting down a turbo-generator at the powerstation, and cooling tower blowdown. In addition, all units in the refinery minimized their water draining to the process sewer and also stored process water in surge tanks at the units. All these steps and the impounding of storm water in the storm surge/equalization tanks helped maintain effluent quality within permit limits on July 17. However, the continued heavy influent water from the storm filled the storm surge/equalization tanks to capacity at approximately 2:00AM on July 18. The continuing storm event and the lack of surge protection decreased the hydraulic residence time of the wastewater treatment plant and resulted in biological solids not settling completely in the clarifier. As a result elevated levels of TSS and O&G were discharged into Lake Michigan on July 18, 1996 via Outfall 001. The containment boom, which had been previously deployed, successfully contained the sheen and floating biological solids.

The following agency notifications were made on July 18 , 1996:

7:53AM - National Spill Response Center
Incident # 352305

7:55AM - IDEM, Rob Truelove
Incident # 9607101

8:35AM - United States Coast Guard, Petty Officer Meade

8:40AM - Local Emergency Planning Commission, Jeff Minchuk

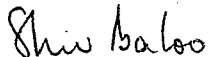
July 26, 1996
Mr. Gary Starks
Page 3

Amoco took proactive steps in the preparation and response to this incident by quickly applying lessons learned from the past experience in the preparation and response to this incident. The watershedding was implemented on June 15 after the desalter upsets occurred. The refinery also operated at reduced crude processing rates in an effort to minimize the desalter upsets. In addition, the desalter chemical vendors were immediately called in to provide technical support to the desalter operations 24 hours a day. When a storm event was imminent, containment boom was deployed to prevent the migration of any potential sheen or floatable solids.

The refinery has initiated an aggressive review of process and wastewater treatment plant operations. This review will include an assessment of crude oil deliveries, tank water draws, desalter operations and wastewater treatment operations in order to identify opportunities to optimize performance and prevent a further recurrence.

We will continue to review the incident and take appropriate steps necessary to prevent its recurrence. If you have any questions or would like additional information, please contact me at (219) 473-3740.

Sincerely,

A handwritten signature in cursive script that reads "Shiv Baloo".

Shiv Baloo
Team Leader-Water



**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

**Amoco Petroleum Products
Refining Business Group
Whiting Business Unit**

2815 Indianapolis Boulevard
Post Office Box 710
Whiting, Indiana 46394-0710
219-473-7700

July 24, 1996

Mr. Gary Starks
Indiana Department of Environmental Management
Office of Water Management
105 South Meridian Street
Indianapolis, IN 46206-6015

Dear Mr. Starks:

**NPDES Permit No. IN 0000108
Exceedance of Discharge Parameters at Outfall 001-Errata Correction**

This letter serves as a correction to the addendum dated 3 July 1996 and the correspondence dated 24 June 1996 to the Indiana Department of Environmental Management concerning the exceedance of discharge parameters at Outfall 001 on 18 June 1996. The correct discharge loadings for 18 June 1996 are as follows: BOD - 16,414 pounds; oil & grease-5,074 pounds; and total suspended solids-114,348 pounds. The cause of the BOD errata was a typographical error, while the total suspended solids and oil & grease erratas were the result of rounding errors.

Amoco regrets any inconvenience these erratas may have caused. If you have any questions or would like additional information, please contact me at 219-473-3740.

Sincerely,

Shiv Baloo
Team Leader-Water

cc: Petty Officer Meade (USCG)
Ken Rhame (IDEM)
Jan Henley (IDEM)
Eddy Depositar (IDEM)



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We make Indiana a cleaner, healthier place to live

Evan Bayh
Governor

~~Kathy Prosser~~
~~Commissioner~~
XXXXXXXX

Michael O'Connor
Commissioner

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
Telephone 317-232-8603
Environmental Helpline 1-800-451-6027

July 9, 1996

VIA CERTIFIED MAIL: Z 411 842 035

Doug Ford, President
Amoco Oil company
200 East Randolph Drive
Chicago, Illinois 60601-7125

Dear Mr. Ford

Re: Noncompliance with
NPDES Permit No. IN 0000108
Amoco Petroleum Products
Refining Business Group
Whiting, Indiana
Cause No. B-2006

Warning of Noncompliance

You are hereby notified that this office has reviewed the status of NPDES Permit No. IN 0000108. This review indicates that the NPDES permit has been violated by exceedances of NPDES permit limitations for total suspended solids (TSS), oil and grease (O&G), and chemical oxygen demand (COD) as a result of the June 18, 1996 incident.

Based on your written report dated June 24, 1996, you state that because of refinery process upsets, the storm surge/equalization tanks were being utilized to hold the desalter water wash and were therefore not available to hold the storm water. Would a temporary shut down of your refinery operation have averted the bypass and subsequent effluent limitation violations? Please note that NPDES Permit No. IN0000108, Management Requirements, Section B.2. Bypass of Treatment Facility, a.(2) definition of "Severe property damage", states, in part, that severe property damage does not mean economic loss caused by delays in production at the permittee's facility.



**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

**Amoco Petroleum Products
Refining Business Group**

Whiting Business Unit

2815 Indianapolis Boulevard
Post Office Box 710
Whiting, Indiana 46394-0710
219-473-7700

July 3, 1996

Mr. Gary Starks
Indiana Department of Environmental Management
Office of Water Management
105 South Meridian Street
Indianapolis, IN 46206-6015

Dear Mr. Starks:

**NPDES Permit No. IN 0000108
Exceedance of Discharge Parameters at Outfall 001-Addendum**

OFFICE
OF
WATER MANAGEMENT
IDEM
JUL 9 2 55 PM '96

This letter serves as a follow-up to our written notification to the Indiana Department of Environmental Management on 24 June 1996 concerning the exceedance of discharge parameters at Outfall 001 on 18 June 1996. It was stated that the daily maximum permit limit for Biochemical Oxygen Demand (BOD) was very likely to be exceeded that day; however, at that time the BOD results were unavailable. The analytical result for BOD became available on the afternoon of Monday, 1 July 1996. The discharge loading for BOD on 18 June 1996 was 180,988.01 pounds, which exceeds our maximum daily permit limit. The exceedance for this parameter was limited to 18 June 1996. The discharge met all permit limits starting Wednesday, 19 June 1996, as documented by subsequent analytical testing.

The refinery has an excellent record in maintaining compliance with its NPDES permit. This exceedance is only the second exceedance since 1984 for a process parameter. We take great pride in this record and have constantly made process and operational improvements at our wastewater treatment plant and in upstream control at the units. We do not expect further permit limit exceedances from this Outfall. We will continue to review the incident and take appropriate steps if necessary to prevent its recurrence. If you have any questions or would like additional information, please contact me at 219-473-3740.

Sincerely,

Shiv Baloo / EBF

Shiv Baloo
Team Leader-Water

cc: Petty Officer Meade (USCG)
Ken Rhame (IDEM)
Jan Henley (IDEM)
Eddy Depositator (IDEM)



**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

August 8, 1996

Mr. Mark W. Stanifer
Chief, Water Enforcement Section
Office of Enforcement
Indiana Department of Environmental Management
100 North Senate Street
P.O. Box 6015
Indianapolis, IN 46206-6015

NPDES Permit Number IN 0000108
Reply to Warning of Noncompliance - Cause No. B-2006
Errata Correction

Dear Mr. Stanifer:

This letter serves as a correction to the letter addressed to your attention dated 31 July 1996 concerning the exceedance of discharge parameters at Outfall 001 on 18 June 1996.

On page 2 of that letter, the following sentence is incorrectly dated: "We implemented the refinery water shedding plan at 9:00am on June 18, 1996 in anticipation of the heavy rains in the Whiting area that began later in the day around 11:00am." The letter should be corrected to reflect the proper date: "We implemented the refinery water shedding plan at 9:00am on June 17, 1996 in anticipation...".

Amoco regrets any inconvenience this errata may have caused. If you have any questions or would like additional information, please contact me at (219)473-3740.

Sincerely,

Shiv Baloo

Shiv Baloo
Team Leader-Water

Attachment

**Amoco Petroleum Products
Refining Business Group**

Whiting Business Unit

2815 Indianapolis Boulevard
Post Office Box 710
Whiting, Indiana 46394-0710
219-473-7700

RECEIVED

AUG 14 1996

MWS LCM



**Amoco Petroleum Products
Refining Business Group
Whiting Business Unit**

2815 Indianapolis Boulevard
Post Office Box 710
Whiting, Indiana 46394-0710
219-473-7700

RECEIVED

SEP 16 1996

September 12, 1996

Ms. Liz Melvin
Water Enforcement Section
Office of Enforcement
Indiana Department of Environmental Management
100 North Senate Avenue
P.O. Box 6015
Indianapolis, IN 46206-6015

Dear Ms. Melvin:

This letter is a follow-up to our discussion on September 10, 1996 regarding the permit exceedances on June 18, 1996 from Outfall 001.

We installed boom around the outfall on the morning of June 18 to contain the biological solids. Three vacuum trucks were also deployed to recover the floating biological solids from within the boomed area at the same time. These recovery operations continued until the afternoon of June 19. Our records indicate that 19 vacuum truck loads were recovered by 7:00 am on June 19. We were unable to track down the number of vacuum truck loads recovered on June 19. Accurately estimating the amount of material recovered is difficult as the concentration of solids in each vacuum truck load depends on how effectively the operator was able to skim the water surface. Even with very skillful operation, the concentration of solids in the skimmings can be low. The containment boom remained in place until June 20, when the weather and the treatment plant had stabilized.

We also reviewed the detailed computer flow records to determine the total volume of the bypass on June 18. The total volume of the bypass flow was estimated to be 0.31 million gallons. A computer program calculates the total discharge flow from readings of four flow meters on different streams. The bypass was only around the activated sludge treatment plant (ASP) portion of the wastewater treatment plant, after oil-water separation and dissolved air flotation (DAF) treatment. Since the bypass is such an unusual event, the bypass flow was not part of the computer program calculations for total discharge flow. The bypass point was also just upstream of a flow meter which

September 12, 1996

Ms. Liz Melvin

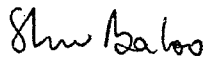
Page 2

is used to calculate the total flow. Therefore we believe that the most accurate estimate of total flow for June 18 would be 23 million gallons.

Finally, we reviewed the reported concentrations of the various parameters in the final discharge effluent. The sampling point for the final discharge effluent is located after the point where the bypass stream recombines with the main flow and is located just before the discharge enters the outfall. Therefore, the concentrations reported to you previously are still accurate and do not need to be corrected.

Thank you for your time and consideration in this matter. Please contact me if you have any questions or would like additional information at (219) 473-3740.

Sincerely,

A handwritten signature in cursive script, appearing to read "Shiv Baloo".

Shiv Baloo

Team Leader - Water



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We make Indiana a cleaner, healthier place to live

Evan Bayh
Governor

Kathy Prosser
Commissioner

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
Telephone 317-232-8603
Environmental Helpline 1-800-451-6027

October 25, 1995

VIA CERTIFIED MAIL: Z 339 770 813

Marie F. Osadjan, Attorney
Amoco Corporation
200 East Randolph Drive
P. O. Box 87703
Chicago, Illinois 60680-0703

Dear Ms. Osadjan:

Re: Adoption of Agreed Order and
Issuance of Final Order
Commissioner, Indiana Department
of Environmental Management

vs.

Amoco Oil Company and
Amoco Pipeline Company
Cause No. B-1545

This letter is to inform you that the Commissioner of the Indiana Department of Environmental Management (the Department) has approved the Agreed Order negotiated between you or your representatives and members of my staff and has issued same as the Department's Final Order. A copy of the executed Final Agreed Order is enclosed.

As to civil penalties provided for in the document, please forward a check made payable to the Environmental Management Special Fund to the above address marked: Cashier, Indiana Department of Environmental Management, P.O. Box 7060, Indianapolis, Indiana 46206-7060, within thirty (30) days of receipt of this correspondence. To insure proper processing, please reference the cause number of this action with your payment.



FEDERAL EXPRESS

**Amoco Petroleum Products
Refining Business Group
Whiting Business Unit**

2815 Indianapolis Boulevard
Post Office Box 710
Whiting, Indiana 46394-0710
219-473-7700

February 21, 1995

Mr. Lonnie Brumfield, Chief
Permit Section, Operations Branch
Indiana Department of Environmental Management
100 North Senate Avenue
P.O. Box 6015
Indianapolis, IN 46206

Dear Mr. Brumfield:

RECEIVED

FEB 22 1995

**IDEM, OFFICE OF
WATER MANAGEMENT**

Use of Rhodamine WT Dye to Study Flow of Once-Through Cooling Water

We intend to conduct a dye study to analyze flow of once-through cooling water through No.6 Separator before it is discharged into Lake Michigan through Outfall 002. In our phone conversation on February 15, 1995 you pointed out that approval to conduct this study was not required. This letter outlines the testing protocol and test dates.

The procedures to be used are in accordance with standard dye testing. Rhodamine WT, which is recommended by the USGS for water tracer studies, will be the dye used (the MSDS is attached). We will inject dye to achieve a 50 parts per billion (ppb) concentration in the inlet to the separator. Based on preliminary calculations, the total amount of Rhodamine WT dye (stock solution concentration 2×10^8 ppb) will be approximately 10 gallons for the entire study. Rhodamine WT dye is visible down to 20 ppb and can be detected by a fluorometer down to 15 parts per trillion (ppt).

The dye study will be conducted in three parts:

First, a preliminary test during which the dye will be injected for approximately two hours will be conducted on February 23 or 24 depending on the weather. The objectives of this test are to confirm all sampling locations and to visualize dye dispersion through the separator.

Second, a steady-state test during which the Rhodamine WT dye will be injected continuously for approximately 4-5 hours will be conducted during the week of February 28. The objective of this test is to quantify residence times in the separator.

Third, a follow-up test during which the dye will be injected periodically over a three hour period will be conducted during the week of March 1. The objective of the test is to verify residence times and flow patterns in the separator.

Please contact Peter Beronio at (219) 473-3459 if you have any questions.

Sincerely,

Shiv Baloo
Shiv Baloo

Enclosure



RECEIVED

FEB 15 1995

IDEM, OFFICE OF
WATER MANAGEMENT

Amoco Petroleum Products
Refining Business Group
Whiting Business Unit

2815 Indianapolis Boulevard
Post Office Box 710
Whiting, Indiana 46394-0710
219-473-7700

ES
file
Whiting

February 3, 1995

Mr. Levy Soliven
Construction Permits Section
Office of Water Management
Indiana Department of Environmental Management
100 North Senate Avenue
P.O. Box 6015
Indianapolis, IN 46206-6015

Dear Mr. Soliven:

Construction Permits No. 2223, 2196, and 2171

Amoco requested and was granted three construction permits by Indiana Department of Environmental Management to modify the refinery's wastewater collection and treatment system so as to come into compliance with the Benzene Waste Operations NESHA, Subpart FF, requirements. The construction permits granted were:

1. Equalization Tank and Dissolved Air Flotation Modifications - Permit No. 2223; approved October 29, 1993.
2. Brine Pretreatment Facility - Permit No. 2196; approved August 5, 1993.
3. Process Wastewater Drain System, Water Draw Decant Tanks and Three-Phase Separators - Permit No. 2171; approved February 16, 1993.

This letter summarizes the construction activities that were completed under these permits.

1. Permit No. 2223

It was determined that a new equalization tank was not required to meet Subpart FF requirements. Rather, one of the existing equalization tanks was covered and sealed. This existing tank is larger than the proposed tank.

The Dissolved Air Flotation unit was modified. Air mixing was replaced with mechanical mixing, and the unit was covered and vapor-controlled.

Mr. Levy Soliven
Indiana Department of Environmental Management
Page 2
February 3, 1995

2. Permit No. 2196

The brine pretreatment system was not installed since it was determined that such a system was not required to meet benzene NESHAP requirements.

3. Permit No. 2171

An above-grade wastewater collection system was installed for the tank field water draws and remediation water. The existing below-grade refinery system was sealed and vapor-controlled according to Subpart FF requirements.

Two new decant tanks were constructed according to Subpart FF requirements to process primarily tank water draws and remediation water.

A three-phase separator was constructed for the Distillate Desulfurizer Unit. The other process unit connections to the existing below-grade process drain system were reviewed for consistency with Subpart FF requirements.

With these modifications, the influent water quality to the wastewater treatment plant will improve due to enhanced oil recovery in the decant tanks.

Please contact me at (219) 473-3740 if you have any questions.



S. Baloo
Team Leader - Water

SB/laa

CROMPTON & KIMBLE CORPORATION
DYES & CHEMICALS DIVISION
ENVIRONMENTAL AFFAIRS DEPARTMENT
P.O. BOX 341
READING, PA 19603
(215) 682-8765

MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION

TRADE NAME.....: INTRACID RHODAMINE WT LIQUID
CHEMICAL FAMILY.....: XANTHENE
ITEM FAMILY.....: 4817
COLOR INDEX NAME.....: C.I. ACID RED 38
CAS NO.....: PROPRIETARY
REVISION DATE.....: 03/06/92

LAST REVISION DATE: 03/04/92

II. HAZARD WARNING LABEL

WARNING:

CAUSES EYE IRRITATION

MAY CAUSE SKIN IRRITATION

AVOID CONTACT WITH EYES AND SKIN, AVOID INHALATION OF VAPORS,
WASH THOROUGHLY AFTER HANDLING, KEEP CONTAINERS CLOSED.

THIS PRODUCT HAS BEEN CERTIFIED BY THE NATIONAL SANITATION
FOUNDATION INTERNATIONAL (NSF) TO THE REQUIREMENTS OF ANSI/NSF
STANDARD 60: DRINKING WATER TREATMENT CHEMICALS - HEALTH EFFECTS.
CONCENTRATIONS IN DRINKING WATER ARE NOT TO EXCEED 0.1 PPB AND
THE EXPOSURE (END USE) IS TO BE INFREQUENT.

THE SUITABILITY OF THIS PRODUCT FOR A SPECIFIC APPLICATION SHOULD
BE EVALUATED BY A QUALIFIED HYDROLOGIST BEFORE USE.

III. HAZARDOUS INGREDIENTS

INGREDIENT: TRIMELITIC ACID
EXPOSURE LIMITS.....: NONE ESTABLISHED

%: 5

NAPIM HMIS

H: 2 F: 1 R: 1 P: C

IV. PHYSICAL DATA

APPEARANCE.....: DARK RED LIQUID
ODOR.....: NO ODOR
BOILING POINT.....: 100 C
MELTING POINT.....: -10 C
PH.....: 10.5 - 10.8
SOLUBILITY IN WATER: SOLUBLE
SPECIFIC GRAVITY....: 1.13 +/- 0.02

V. FIRE AND EXPLOSION DATA

FLASH POINT.....: N/A (AQUEOUS)

FLAMMABLE UNITS.....: N/A
EXTINGUISHING MEDIA: WATER, DRY CHEMICAL, CO2
SPECIAL PROCEDURES
FOR FIGHTING FIRE...: WEAR SCBA

UNUSUAL HAZARDS.....: NONE EXPECTED

NFPA CODE:

F: 1 H: 1 R: 1 S: N

VI. REACTIVITY DATA

STABILITY.....: STABLE
CONDITIONS TO
AVOID.....: DO NOT MIX WITH ACIDS
POLYMERIZATION.....: WILL NOT OCCUR
CONDITIONS TO
AVOID.....: NONE
INCOMPATIBILITY.....: NONE KNOWN
HAZARDOUS
DECOMPOSITION.....: BURNING WILL PRODUCE OXIDES OF CARBON & NITROGEN

VII. HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE:

CONTAINS TRIMELITIC ACID, MAY CAUSE EYE AND SKIN IRRITATION.

INTRACID RHODAMINE WT LIQUID WAS TESTED IN A BATTERY OF IN VITRO AND IN VIVO MAMMALIAN ASSAYS RESULTING IN NEGLIGIBLE OR LOW LEVELS OF GENOTOXIC ACTIVITY EVEN AT VERY HIGH CONCENTRATIONS. NO EVIDENCE OF IN VIVO GENETIC ACTIVITY WAS OBSERVED EITHER IN TERMS OF BONE MARROW MICRONUCLEI OR SPERM ABNORMALITIES. (G.R. DOUGLAS ET AL, "COMPARATIVE MAMMALIAN IN VITRO AND IN VIVO STUDIES ON THE MUTAGENIC ACTIVITY OF RHODAMINE WT", MUTATION RESEARCH, 118, 1983, 117-125)

INTRACID RHODAMINE WT WAS POSITIVE IN A SALMONELLA/MAMMALIAN MICROsome ASSAY (NESTMANN AND KOWBEL, 1979). G. DOUGLAS AS REFERENCED, STATED THAT IMPURITIES IN THE DYE MAY HAVE CAUSED THE MUTAGENIC EFFECTS SEEN OR ALTERNATIVELY THE DYE MAY BE A POINT MUTAGEN. DOUGLAS FURTHER REPORTED THAT TAKING THE DATA ALTOGETHER FROM HIS STUDY, "...RHODAMINE WT APPEARS NOT TO REPRESENT A MAJOR GENOTOXIC HAZARD."

ROUTES OF EXPOSURE:

INHALATION: X

SKIN: X

INGESTION:

EYES: X

SIGNS AND SYMPTOMS

OF OVEREXPOSURE.....: NOT KNOWN

MEDICAL CONDITIONS

GENERALLY AGGRAVATED

BY EXPOSURE.....: NOT KNOWN

CARCINOGENICITY:

NTP: NO

IARC: NO

OSHA REGULATED: NO

:

TOXICITY DATA:

ORAL (ANIMAL).....: ALD 25 G/KG

DERMAL (ANIMAL).....: NO DATA

INHALATION (ANIMAL): NO DATA
EFFECTS TO EYES
(ANIMAL): NO DATA
SKIN IRRITATION: NO DATA
(ANIMAL): NO DATA
FISH, LC50 (LETHAL): >320 MG/L 96 & 48 HR (RAINBOW TROUT)
ADDITIONAL DATA: 170 MG/L 72HR (DAPHNIA), 10 MG/L 48HR (OYSTER),
>2000 MG/L 96HR (WATER HOG LOUSE)
NO EVIDENCE OF SIGNIFICANT BIOACCUMULATION IN FISH

VIII. EMERGENCY AND FIRST AID PROCEDURE

INHALATION: IF INHALED, MOVE TO FRESH AIR. IF BREATHING IS DIFFICULT, GIVE OXYGEN AND GET MEDICAL ATTENTION RIGHT AWAY.
EYE CONTACT: FLUSH EYES WITH FLOWING WATER FOR AT LEAST 15 MINUTES, HOLDING EYELIDS APART TO IRRIGATE THOROUGHLY. GET MEDICAL ATTENTION RIGHT AWAY.
SKIN CONTACT: WASH AFFECTED SKIN AREAS THOROUGHLY WITH SOAP AND WATER. IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN
INGESTION: IF SWALLOWED, DILUTE WITH WATER AND INDUCE VOMITING. GET IMMEDIATE MEDICAL ATTENTION. NEVER GIVE FLUIDS OR INDUCE VOMITING IF PATIENT IS UNCONSCIOUS OR HAS CONVULSIONS.

IX. SPECIAL PROTECTION

RESPIRATORY: NONE REQUIRED UNDER NORMAL CONDITIONS
EXPOSURE LIMITS: NONE ESTABLISHED FOR THE LIQUID PRODUCT
VENTILATION LOCAL: X MECHANICAL:
PROTECTIVE GLOVES: RUBBER GLOVES
EYE PROTECTION: GOGGLES
OTHER PROTECTIVE EQUIPMENT: APRON, COVERALL TO MINIMIZE SKIN CONTACT

X. SPECIAL PRECAUTIONS

IN ACCORD WITH GOOD INDUSTRIAL PRACTICE, HANDLE THIS PRODUCT WITH CARE AND AVOID PERSONAL CONTACT.

XI. TRANSPORTATION INFORMATION

DOT HAZARD CLASSIFICATION: N/A
DOT PROPER SHIPPING NAME: NOT DOT REGULATED
DOT LABEL: N/A
UN/NA NUMBER: N/A
R.Q.: N/A

XII. SPILL AND LEAK PROCEDURES

REGULATORY WASTE DESCRIPTION: NOT HAZARDOUS ACCORDING TO 40 CFR PART 261
R.Q.: NONE

WASTE DISPOSAL.....: BURY OR INCINERATE ACCORDING TO FEDERAL, STATE
AND LOCAL REGULATIONS.
DRUM DISPOSAL.....: CONTAINERS SHOULD BE TRIPLE RINSED ACCORDING TO
FEDERAL REGULATIONS AND/OR GOOD WASTE MANAGEMENT
PRACTICE.
STEPS TO BE TAKEN IF
MATERIAL RELEASED
OR SPILLED.....: WEAR APPROPRIATE SAFETY EQUIPMENT. CONTAIN AND
CLEAN UP SPILL IMMEDIATELY, PREVENT FROM ENTERING
FLOOR DRAINS. CONTAIN LIQUIDS USING ABSORBANTS,
SWEEP POWDERS CAREFULLY MINIMIZING DUSTING. SHOVEL
ALL SPILL MATERIALS INTO DISPOSAL DRUM, FOLLOW
DISPOSAL INSTRUCTIONS. SCRUB SPILL AREA WITH
DETERGENT, FLUSH WITH COPIOUS AMOUNTS OF WATER.

XIII. REGULATORY INFORMATION

TSCA.....: IN COMPLIANCE.

SARA:

THIS PRODUCT IS NOT REPORTABLE UNDER SARA SECTION 313

OSHA HAZARD CLASSIFICATION:

ACUTE.....: YES CHRONIC...: NO FLAMMABLE.: NO
REACTIVE...: NO OXIDIZER...: NO

STATE RIGHT TO KNOW LAWS:

INGREDIENTS:	CAS#/TSRN	PA	NJ	MA
PROPRIETARY DYE	NJ-TSRN18881400-5038P	NH	NH	NH
PROPRIETARY DYE	NJ-TSTN18881400-5088P	NH	NH	NH
TRIMELITIC ACID	528-44-9	NH	NH	NH
WATER	7732-18-5	NH	NH	NH

H-HAZARDOUS, NH-NONHAZARDOUS

XIV. OTHER INFORMATION

THIS PRODUCT IS A "CONTROLLED" PRODUCT AS DEFINED BY THE
CANADIAN WHMIS, CATEGORY D-2-B.

REFERENCES:

1. EPA LETTER, 8/2/88, RECOMMENDED GUIDELINES,
EFFECTIVE THROUGH 4/7/90.
2. GRADIENT CORPORATION LETTER, 11/20/89, RISK ASSESSMENT.

REFERENCES AND A TECHNICAL BULLETIN ARE AVAILABLE UPON REQUEST.

DISCLAIMER:

CROMPTON & KNOWLES WARRANTS THAT THIS PRODUCT CONFORMS TO THE
CHEMICAL DESCRIPTION ON THE LABEL AND IS REASONABLY FIT FOR
THE SPECIFIC PURPOSES REFERRED TO IN ITS DIRECTIONS FOR USE,
SUBJECT TO THE INHERENT RISKS REFERRED TO IN THE MATERIAL SAFETY
DATA SHEET FOR THIS PRODUCT. CROMPTON & KNOWLES MAKES NO OTHER
EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR
ANY OTHER EXPRESS OR IMPLIED WARRANTY. IN NO CASE SHALL CROMPTON
& KNOWLES BE LIABLE FOR CONSEQUENTIAL, SPECIAL, OR INDIRECT
DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.

NSF Certifies Tracer Dye, WT Rhodamine WT

Alan B. Nichols

A widely accepted water tracing agent, Intracid® Rhodamine WT Liquid, has been certified by the National Sanitation Foundation International (NSF International) for use under NSF Standard 60, Drinking Water Treatment Chemicals—Health Effects.

Intracid Rhodamine WT Liquid is a fluorescent red dye used to measure water-flow rates and dilutions in rivers, streams, and ocean currents. The product is also widely used to identify underground water-flow patterns and water-mixing patterns in effluents from industries and to track flow patterns in wastewater treatment basins.

The NSF Standard 60 was developed by a private consortium with the support of EPA to establish requirements for products which are added directly to water for treatment purposes. The consortium includes the American Water Works Association, the American Water Works Research Foundation, and the Association of State Drinking Water Administrators.

NSF certification was preceded by a risk-assessment study, which was conducted in 1990 by the Gradient Corporation of Cambridge, Mass. The study concluded that exposure to the tracer dye in potable water supplies presents a *de minimis* health risk, less than one in a million. The study also indicated that the use of Rhodamine WT in place of other dyes as a water tracer appears to result in a net decrease in the amount of tracer required to be present in the water.

Continued on page 4

Tracer Dye

Continued from page 1

This was attributed to the fact that the agent is not readily adsorbed by sediment. Beyond that, the product is not toxic to aquatic life based on available data.

Manufactured by Crompton & Knowles Corporation (C&K), Intracid Rhodamine WT Liquid is a bright fluorescent red dye. It exhibits exceptionally high tinctorial strength and a low tendency to stain silt, dirt, plants, and other suspended matter in freshwater or salt water. It is designed for water tracing by fluorimetry or visual methods and is detectable at 0.1 ppb by fluorimetric techniques under ideal conditions.

"Intracid Rhodamine WT Liquid, when used in combination with a suitable fluorometer, provides a simple means for determination of where does that line discharge to," says Jack Magill, technical director of C&K's Industrial Products Division.

Manufacturers of fluorometers, in-

cluding Turner Designs of Sunnyvale, Calif., have detailed application information. Users achieve maximum precision if they carry out their own measurements on the starting material because there will be some variation from lot to lot, according to the Industrial Products Division of Crompton & Knowles. ☐

Intracid Rhodamine WT Liquid

Properties

Appearance..... Clear, very dark red aqueous solution, substantially free from insoluble matter.

Specific gravity..... Approximately 1.15 at 20/20°C. Gravity on specific lots provided on request.

pH..... 10.8 ± 0.7 at 20°C.

Dispersion in sea water..... Shows complete dispersion when dropped into sea water.

Bleachability..... Bleachable with sodium hypochlorite.

Optimum excitation wavelength..... About 536 nm.

Optimum analyzing wavelength..... About 580 nm.

pH sensitivity..... No significant change in fluorescence between 5.5 and 11.0.

Freezing point..... Approximately -10°C.

Viscosity..... Less than 25 centipoises at 25°C.

For more information, contact Crompton & Knowles, Industrial Products Division, 33157, Charlotte, NC 28233 (800) 323-4383.



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We make Indiana a cleaner, healthier place to live

Evan Bayh
Governor

Kathy Prosser
Commissioner

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
Telephone 317-232-8603
Environmental Helpline 1-800-451-6027

January 13, 1995

VIA CERTIFIED MAIL Z 339 820 451

AMOCO OIL COMPANY - *Whiting*
200 EAST RANDOLPH
CHICAGO, IL 60601

Dear Facility:

NPDES Permit No. IN0000108

Re: Annual NPDES Permit Fee
Assessment

As you may know, last year the Indiana General Assembly passed IC 13-7-16.1 requiring the Indiana Department of Environmental Management (IDEM) to assess 1995 annual operation fees by January 15, 1995. The fees for your facility are due on March 14, 1995. It is important to note that payment of fees must be made by the due date, or a delinquency charge or other penalty under IC 13-7-13-1 may be imposed. You will find enclosed your 1995 annual operation permit assessment.

I'd like to take this opportunity to tell you a little more about some recent changes here at IDEM. Our primary responsibility of protecting the environment has traditionally been approached through the regulatory process: writing rules, permitting, and compliance monitoring. However, as you are no doubt aware, the regulations have grown more complex over time. IDEM recognizes that achievement of our goal of environmental protection can be enhanced through helping the regulated community comply with the law. In furtherance of that goal, IDEM has taken steps to provide education and technical assistance to Indiana businesses.

Specifically, IDEM has created the position of Deputy Commissioner for Public Policy and Planning to bring all customer relations functions under the authority of one person. In addition to overseeing the Office of Business Relations, the Office of Community Relations, and the Office of Pollution Prevention and Technical Assistance, the Deputy Commissioner will oversee the creation of a new office, the Office of Voluntary Compliance, which will serve to help regulated entities get answers to compliance questions. All of these offices together will help promote better communication and cooperation with the regulated community. Recent changes in State law have also provided funding necessary to improve the permit process, and I have enclosed a fact sheet detailing our efforts in that regard.

If you have any questions regarding your fee assessment, please contact Mr. Gary Taylor at (317) 233-0569.

Sincerely,

T. P. Chang
Acting Assistant Commissioner
Office of Water Management

Enclosures



**Amoco Petroleum Products
Refining Business Group
Whiting Business Unit**

2815 Indianapolis Boulevard
Post Office Box 710
Whiting, Indiana 46394-0710
219-473-7700

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

December 19, 1994

Mr. Jeff Ewick
Office of Water Management
Indiana Department of Environmental Management
100 North Senate Street
P. O. Box 6015
Indianapolis, IN 46206-6015

RECEIVED

DEC 27 1994

**IDEM, OFFICE OF
WATER MANAGEMENT**

Signature Authority for NPDES Permit No. 0000108

The Amoco Whiting refinery has an NPDES permit, No. 0000108, which is administered by Indiana Department of Environmental Management. Each month the refinery submits documentation demonstrating compliance with the permit. This documentation includes a summary letter, the Daily Monitoring Report (DMR), and the Water Quality Report (WQR). Mr. Richard B. Sheldon, Refinery Manager, currently signs both the DMR and WQR, as well as the summary letter. Also, Mr. George T. Cook, Superintendent of the Lakefront wastewater treatment plant, co-signs the WQR.

Mr. Sheldon would like to delegate authority to sign the DMR and WQR forms to Mr. Shiv Baloo, Team Leader, Water Quality, and/or Mr. Peter B. Beronio, Environmental Engineer, Water Quality. Mr. Sheldon will continue to sign the summary letter. Also, Mr. Cook will continue to co-sign the WQR.

We would appreciate your consent to this proposal. Please call me at (219) 473-3459 if you have any questions.

Sincerely,

Peter B. Beronio



Amoco Oil Company

Post Office Box 710
Whiting, Indiana 46394-0710

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

November 18, 1994

Ms. Kathy Prosser
Commissioner
Indiana Department of Environmental Management
Office of the Commissioner
105 South Meridian Street
Indianapolis, IN 46206-6015

Dear Ms. Prosser:

Notice of Alternate Class D Certified Operators
Whiting Refinery - NPDES PERMIT IN0000108

In accordance with IAC 8-12-1.1, this is a notification that the following individuals who are Class D Wastewater Treatment Plant Certified are designated to sign all appropriate and required forms and to act as certified operators for the Amoco Oil Company Whiting Refinery Wastewater Treatment Plant which includes Outfalls 001 and 002 and for the refinery's stormwater system composed of Outfalls 003 and 004 when George T. Cook, the Wastewater Treatment Plant Superintendent, is unavailable:

Robyn B. Stephens, Superintendent of Environmental Control
Certification # 10772

Richard L. Taylor, Wastewater Treatment Plant Shift Supervisor
Certification # 5808

Sincerely,

A handwritten signature in cursive script, reading "Julie G. Murphy".

Julie G. Murphy
Manager, Environmental Control Division

cc: Mr. Lonnie Brumfield - IDEM

Indiana Department of Environmental Management
Commissioner's Office

NOV 22 1993



Amoco Oil Company

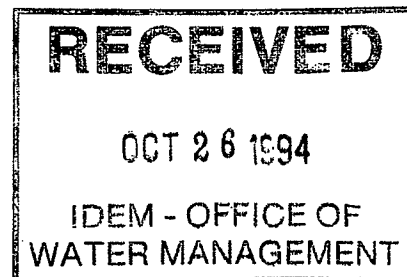
2815 Indianapolis Boulevard
Post Office Box 710
Indianapolis, Indiana 46394-0710
219-473-7700

file room
10/3/95

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

October 18, 1994

Mr. Lonnie Brumfield
Chief, Permit Section
Indiana Department of Environmental Management
Office of Water Management
100 North Senate Street
P.O. Box 6015
Indianapolis, IN 46026-6015



Dear Mr. Brumfield:

Approval for Use of New Additive - NPDES Permit No. IN0000108

In accordance with Part I (2) of our NPDES Permit No. IN 0000108, we are applying for approval of the use of a new additive to be used in the waters contributing to Outfall 002, non-contact cooling water. The additive, Nalco 8357 Scale Inhibitor, would be injected into the non-contact cooling water side of two heat exchangers at one of the refinery's crude units to prevent excessive fouling of the exchangers.

The additive would be controlled at a 5 ppm injection rate. The non-contact cooling water flow through the two exchangers is 1000 gpm, which is 1.2% of the total non-contact cooling water discharge flow (average 117 mgal/day). Based on a conservative estimate that none of the additive would be consumed in the system, the maximum concentration in the final discharge would be 0.06 ppm, which is well below the AAC value of 100 ppm and CAC value of 4.44 ppm as calculated from the toxicity information provided on the MSDS for the chemical. The MSDS for Nalco 8357 Scale Inhibitor is provided for your reference. The pH of the non-contact cooling water is maintained between the permit limits of 7.0 to 9.0.

All information has been provided for the new additive as required by Attachment A Reporting and Testing Requirements for Recirculating Water and Non-Contact Cooling Water System Additives Indiana Department of Environmental Management.

Mr. Lonnie Brumfield
Page 2
October 18, 1994

We would appreciate a written response from IDEM concerning this matter. If you have any questions or need any additional information, please contact Natalie Grimmer at (219) 473-3459.

Sincerely,

A handwritten signature in cursive script, appearing to read "J. E. Naccache".

J. E. Naccache
Superintendent, Water Quality

Attachment

94292WHI0031



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 8357 SCALE INHIBITOR

Emergency Telephone Number

Medical (800) 462-5378 (24 hours)

(800) I-M-ALERT

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: NALCO 8357 SCALE INHIBITOR

DESCRIPTION: An aqueous solution of a polyacrylate

NFPA 704M/HMIS RATING: 1/1 HEALTH 1/1 FLAMMABILITY 0/0 REACTIVITY 0 OTHER
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

SECTION 2 HAZARDOUS INGREDIENTS

Our hazard evaluation of the ingredient(s) under OSHA's Hazard Communication Rule, 29 CFR 1910.1200 has found none of the ingredient(s) hazardous.

SECTION 3 PRECAUTIONARY LABEL INFORMATION

CAUTION: May cause irritation to skin and eyes. Avoid contact with skin, eyes and clothing. Do not take internally.

Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

SECTION 4 FIRST AID INFORMATION

EYES: Flush with water for 15 minutes. Call a physician.
SKIN: Flush with water for 15 minutes.
INGESTION: Do not induce vomiting. Give water. Call a physician.
INHALATION: Remove to fresh air. Treat symptoms. Call a physician.

NOTE TO PHYSICIAN: Based on the individual reactions of the patient, the physician's judgment should be used to control symptoms and clinical condition.

CAUTION: If unconscious, having trouble breathing or in convulsions, do not induce vomiting or give water.

SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTE(S) OF EXPOSURE: Eye, Skin

EYE CONTACT: May cause irritation with prolonged contact.
SKIN CONTACT: May cause irritation with prolonged contact.

SYMPTOMS OF EXPOSURE: A review of available data does not identify any symptoms from exposure not previously mentioned.

AGGRAVATION OF EXISTING CONDITIONS: A review of available data does not identify any worsening of existing conditions.



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 8357 SCALE INHIBITOR

Emergency Telephone Number

Medical (800) 462-5378 (24 hours)

(800) I-M-ALERT

SECTION 9 REACTIVITY INFORMATION

(CONTINUED)

be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

SECTION 10 PERSONAL PROTECTION EQUIPMENT

RESPIRATORY PROTECTION: Respiratory protection is not normally needed since the volatility and toxicity are low. If significant vapors, mists or aerosols are generated, wear a NIOSH approved or equivalent respirator.

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a pressure-demand, self-contained breathing apparatus is recommended.

VENTILATION: General ventilation is recommended.

PROTECTIVE EQUIPMENT: Use impermeable gloves and chemical splash goggles when attaching feeding equipment or doing maintenance.

The availability of an eye wash fountain and safety shower is recommended.

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

SECTION 11 SPILL AND DISPOSAL INFORMATION

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER (800) I-M-ALERT or (800) 462-5378.

SPILL CONTROL AND RECOVERY:

Small liquid spills: Contain with absorbent material, such as clay, soil or any commercially available absorbent. Shovel reclaimed liquid and absorbent into recovery or salvage drums for disposal. Refer to CERCLA in Section 14.

Large liquid spills: Dike to prevent further movement and reclaim into recovery or salvage drums or tank truck for disposal. Refer to CERCLA in Section 14.

DISPOSAL: If this product becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

As a non-hazardous liquid waste, it should be solidified with stabilizing agents (such as sand, fly ash, or cement) so that no free liquid remains